PART 30--GAUGING MANUAL

AUTHORITY: 26 U.S.C. 7805.

SOURCE: T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, unless otherwise noted.

Subpart A--Scope of Regulations

§30.1 Gauging of distilled spirits.

(a) *General.*

This part relates to the gauging of distilled spirits. The term "gauging" means the determination of the proof and the quantity of distilled spirits. The procedures prescribed in or authorized under the provisions of this part, except as may be otherwise authorized in this chapter, shall be followed in making any determination of quantity or proof of distilled spirits required by or under the authority of regulations in this chapter. The tables referred to in subpart E of this part appear in the "Gauging Manual Embracing Instructions and Tables for Determining Quantity of Distilled Spirits by Proof and Weight" as incorporated by reference in this part (see paragraph (c) of this section). These tables, together with their instructions, shall be used, wherever applicable, in making the necessary computations from gauge data.

(b) *Tables referred to in subpart E of this part.*

Table 1 provides a method of correcting hydrometer indications at temperatures between 0 and 100 degrees Fahrenheit to true proof. If distilled spirits contain dissolved solids, temperature correction of the hydrometer reading by the use of this table would result in apparent proof rather than true proof. Tables 2 and 3 show the gallonage of spirituous liquor according to weight and proof. Table 4 shows the gallons per pound at each one-tenth proof from 1 to 200 proof. Table 5 shows the weight per wine gallon and proof gallon at each proof. Table 6 shows the volumes of alcohol and water and the specific gravity (air and vacuum) of spirituous liquor at each proof. Table 7 provides a means of ascertaining the volume (at 60 degree Fahrenheit) of spirits at various temperatures ranging from 18 degrees through 100 degrees Fahrenheit.

(c) *Incorporation by reference.*

The "Gauging Manual Embracing Instructions and Tables for Determining Quantity of Distilled Spirits by Proof and Weight" (ATF Publication 5110.6; November 1978) is incorporated by reference in this part. This incorporation by reference was approved by the Director of the Federal Register on March 23, 1981. This publication may be inspected at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC, and is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204); 80 Stat. 383, as amended (5 U.S.C. 552(a)))

Subpart B--Definitions

§30.11 Meaning of terms.

When used in this part, where not otherwise distinctly expressed or manifestly incompatible with the intent thereof, terms shall have the meanings ascribed in this section. Words in the plural form shall include the singular, and vice versa, and words importing the masculine gender shall include the feminine. The terms "includes" and "including" do not exclude things not enumerated which are in the same general class.

Appropriate ATF Officer. An officer or employee of the Bureau of Alcohol, Tobacco and Firearms (ATF) authorized to perform any functions relating to the administration or enforcement of this part by ATF Order 1130.17, Delegation Order--Delegation of the Director's Authorities in 27 CFR Part 30--Gauging Manual.

Bulk conveyance. Any tank car, tank truck, tank ship, tank barge, or other similar container approved by the appropriate ATF officer, authorized for the conveyance of spirits (including denatured spirits) in bulk.

CFR. The Code of Federal Regulations.

Container. Any receptacle, vessel, or form of package, bottle, tank, or pipeline used, or capable of use, for holding, storing, transferring or conveying distilled spirits.

Denatured spirits or denatured alcohol. Spirits to which denaturants have been added pursuant to formulas prescribed in 27 CFR Part 21.

Director. The Director, Bureau of Alcohol, Tobacco and Firearms, the Department of the Treasury, Washington, DC.

Gallon or wine gallon. The liquid measure equivalent to the volume of 231 cubic inches.

I.R.C. The Internal Revenue Code of 1954, as amended.

Package. Any cask, barrel, drum, or similar container approved under the provisions of this chapter.

Proof. The ethyl alcohol content of a liquid at 60 degrees Fahrenheit, stated as twice the percent of ethyl alcohol by volume.

Proof gallon. A United States gallon of proof spirits, or the alcoholic equivalent thereof.

Proof spirits. That liquid which contains one-half its volume of ethyl alcohol of a specific

gravity of seven thousand nine hundred and thirty-nine ten-thousandths (0.7939) in vacuum at 60 degrees Fahrenheit referred to water at 60 degrees Fahrenheit as unity.

Spirits, spirituous liquor, or distilled spirits. That substance known as ethyl alcohol, ethanol, or spirits of wine in any form, including all dilutions and mixtures thereof, from whatever source or by whatever process produced, but not denatured spirits unless specifically stated. For the sole purpose of gauging wine and alcoholic flavoring materials on the bonded premises of a distilled spirits plant, such alcoholic ingredients shall have the same meaning described herein to spirits, spirituous liquor, or distilled spirits.

This chapter. Title 27, Code of Federal Regulations, Chapter I (27 CFR Chapter I).

U.S.C. The United States Code.

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985 as amended by T.D. ATF-438, 66 FR 5481, Jan. 19, 2001]

Subpart C--Gauging Instruments

§30.21 Requirements.

(a) *General.*

The proof of distilled spirits shall be determined by the use of gauging instruments as prescribed in this part.

(b) *Proprietors.*

Proprietors shall use only accurate hydrometers and thermometers that show subdivisions or graduations of proof and temperature which are at least as delimitated as the instruments described in §30.22.

(c) *Appropriate ATF Officers.*

Appropriate ATF officers shall use only hydrometers and thermometers furnished by the Government. However, where this part requires the use of a specific gravity hydrometer, ATF officers shall use precision grade specific gravity hydrometers conforming to the provisions of Sec. 30.24, furnished by the proprietor. However, the appropriate ATF officer may authorize the use of other instruments approved by the appropriate ATF officer as being equally satisfactory for determination of specific gravity and for gauging. From time to time appropriate ATF officers shall verify the accuracy of hydrometers and thermometers used by proprietors.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985 as amended by T.D. ATF-438, 66 FR 5481, Jan. 19, 2001]

§30.22 Hydrometers and thermometers.

The hydrometers used are graduated to read the proof of aqueous alcoholic solutions at 60 degrees Fahrenheit; thus, they read, 0 for water, 100 for proof spirits, and 200 for absolute alcohol. Because of temperature-density relationships and the selection of 60 degrees Fahrenheit for reporting proof, the hydrometer readings will be less than the true percent of proof at temperatures below 60 degrees Fahrenheit and greater than the true percent of proof at temperatures above 60 degrees Fahrenheit. Hence, corrections

are necessary for hydrometer readings at temperatures other than 60 degrees Fahrenheit. Precision hydrometers shall be used for gauging spirits. Hydrometers and thermometers shall be used and the true percent of proof shall be determined in accordance with §30.31. Hydrometers are designated by letter according to range of proof and are provided in ranges and subdivisions of stems as follows:

Precision	Range	Subdivision
F	0 to 20	0.2°
G	20 to 40	0.2°
H	40 to 60	0.2°
I	60 to 80	0.2°
K	75 to 95	0.2°
L	90 to 110	0.2°
M	105 to 125	0.2°
N	125 to 145	0.2°
P	145 to 165	0.2°
Q	165 to 185	0.2°
R	185 to 206	0.2°

Thermometers are designated by type according to range of degrees Fahrenheit and are provided in ranges and subdivisions of degrees as follows:

Type	Range	Subdivision
Pencil type	10° to 100°	1°
V-back	10° to 100°	1°
Glass shell (earlier model)	40° to 100°	1/2°
Glass shell (later model)	40° to 100°	1/2°

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37003, July 16, 1996]

§30.23 Use of precision hydrometers and thermometers.

Care should be exercised to obtain accurate hydrometer and thermometer readings. In order to accomplish this result, the following precautions should be observed. Bulk spirits should be thoroughly agitated so that the test samples will be representative of the entire quantity. The hydrometers should be kept clean and free of any oily substance. Immediately before readings are taken, the glass cylinder containing the thermometer should be rinsed several times with the spirits which are to be gauged so as to bring both the cylinder and the thermometer to the temperature of the spirits (if time permits, it is desirable to bring both the spirits and the instruments to room temperature). If the outer surface of the cylinder becomes wet, it should be wiped dry to avoid the cooling effect of rapid evaporation. During the readings the cylinder should be protected from drafts or other conditions which might affect its temperature or that of the spirits which it contains. The hands should not be placed on the cylinder in such a manner as to warm the liquid contained therein. The hydrometer should be inserted in the liquid and the hydrometer bulb raised and lowered from top to bottom 5 or 6 times to obtain an even temperature distribution over its surface, and, while the hydrometer bulb remains in the liquid, the stem should be dried and the hydrometer allowed to come to rest without wetting more than a few tenths degrees of the exposed stem. Special care should be taken to ascertain the exact point at which the level of the surface liquid intersects the scale of proof in the stem of the hydrometer. The hydrometer and thermometer should be immediately read, as nearly simultaneously as possible. In reading the hydrometer, a sighting should be made slightly below the plane of the surface of the liquid and the line

of sight should then be raised slowly, being kept perpendicular to the hydrometer stem, until the appearance of the surface changes from an ellipse to a straight line. The point where this line intersects the hydrometer scale is the correct reading of the hydrometer. When the correct readings of the hydrometer and the thermometer have been determined, the true percent of proof shall be ascertained from Table 1. Another sample of the spirits should then be taken and be tested in the same manner so as to verify the proof originally ascertained. Hydrometer readings should be made to the nearest 0.05 degree and thermometer readings should be made to the nearest 0.1 degree, and instrument correction factors, if any, should be applied. It is necessary to interpolate in Table 1 for fractional hydrometer and thermometer readings.

Example. A hydrometer reads 192.85° at 72.10° F. The correction factors for the hydrometer and the thermometer, respectively are minus 0.03° and plus 0.05°. The corrected reading, then, is 192.82° at 72.15° F.

From Table 1:	
193.0° at 72.0° F	= 190.2°
192.0° at 72.0° F	= 189.1°
Difference	= 1.1°
192.0° at 72.0° F	= 189.9°
192.0° at 73.0° F	= 188.9°
Difference	= 0.2°

The hydrometer difference (1.1°) multiplied by the fractional degree of the hydrometer reading (0.82°)=0.902.

The temperature difference (0.2°) multiplied by the fractional degree of the temperature reading (0.15°)=0.03°.

Proof at 60° F.=189.1+0.902-0.03=189.972°=190.0°.

As shown, the final proof is rounded to the nearest tenth of a degree of proof. In such cases, if the hundredths decimal is less than five, it will be dropped; if it is five or over, a unit will be added.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996]

§30.24 Specific gravity hydrometers.

(a) The specific gravity hydrometers furnished by proprietors to appropriate ATF officers shall conform to the standard specifications of the American Society for Testing and Materials (ASTM) for such instruments. Such specific gravity hydrometers shall be of a precision grade, standardization temperature 60 °/60 °F., and provided in the following ranges and subdivisions:

Range	Subdivision
1.0000 to 1.0500	0.0005
1.0500 to 1.1000	0.0005
1.1000 to 1.1500	0.0005
1.1500 to 1.2000	0.0005
1.2000 to 1.2500	0.0005

No instrument shall be in error by more than 0.0005 specific gravity.

(b) A certificate of accuracy prepared by the instrument manufacturer for the instrument shall be furnished to the appropriate ATF officer.

(c) *Incorporation by reference.*

The "Standard Specification for ASTM Hydrometers," (E 100-72 (1978)), published in the "1980 Annual Book of ASTM Standards" (STP 25 1062 (1980)), is incorporated by reference in this part. This incorporation by reference was approved by the Director of the Federal Register on March 23, 1981. This publication may be inspected at the Office of Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC, and is available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(Sec. 201. Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204); 80 Stat. 383, as amended (5 U.S.C. 552(a)))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996; T.D. ATF-438, 66 FR 5481, Jan. 19, 2001]

§30.25 Use of precision specific gravity hydrometers.

The provisions of §30.23 respecting the care, handling, and use of precision instruments shall be followed with respect to the care, handling, and use of precision grade specific gravity hydrometers. Specific gravity hydrometers shall be read to the nearest subdivision. Because of temperature density relationships and the selection of the standardization temperature of 60 °/60 °F., the specific gravity readings will be greater at temperatures below 60 degrees Fahrenheit and less at temperatures above 60 degress Fahrenheit. Hence, correction of the specific gravity readings will be made for temperature other than 60 degrees Fahrenheit. Such correction may be ascertained by dividing the specific gravity hydrometer reading by the applicable correction factor in Table 7.

Example: The specific gravity hydrometer reading is 1.1525, the thermometer reading is 68 degrees Fahrenheit, and the true proof of the spirits is 115 degrees. The correct specific gravity reading will be ascertained as follows:

(a) From Table 7, the correction factor for 115° proof at 68 °F. is 0.996.

(b) 1.1525 divided by 0.996=1.1571, the corrected specific gravity.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

Subpart D--Gauging Procedures

§30.31 Determination of proof.

(a) *General.*

The proof of spirits shall be determined to the nearest tenth degree which shall be the proof used in determining the proof gallons.

(b) *Solids content not more than 600 milligrams.*

Except as otherwise authorized by the appropriate ATF officer, the proof of spirits containing not more than 600 milligrams of solids per 100 milliliters of spirits shall be determined by the use of a hydrometer and thermometer in accordance with the

provisions of §30.23 except that if such spirits contain solids in excess of 400 milligrams but not in excess of 600 milligrams per 100 milliliters at gauge proof, there shall be added to the proof so determined the obscuration determined as prescribed in §30.32.

(c) *Solids content over 600 milligrams.*

If such spirits contain solids in excess of 600 milligrams per 100 milliliters at gauge proof, the proof shall be determined on the basis of true proof determined as follows:

(1) By the use of a hydrometer and a thermometer after the spirits have been distilled in a small laboratory still and restored to the original volume and temperature by the addition of pure water to the distillate; or

(2) By a recognized laboratory method which is equal or superior in accuracy to the distillation method.

(d) *Initial proof.*

Except when the proof of spirits is used in making the guage prescribed in 27 CFR 19.383 or in making a gauge for determination of tax, the initial determination of proof made on the bonded premises of a distilled spirits plant for such spirits may be used whenever a subsequent gauge is required to be made at that same plant provided that no material has been added to change the proof of the spirits.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended, 1362, as amended (26 U.S.C. 5204, 5211))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985 as amended by T.D. ATF-438, 66 FR 5481, Jan. 19, 2001]

§30.32 Determination of proof obscuration.

(a) *General.*

Proof obscuration of spirits containing more than 400 but not more than 600 milligrams of solids per 100 milliliters shall be determined by one of the following methods. The evaporation method may be used only for spirits in the range of 80-100 degrees at gauge proof.

(b) *Evaporation method.*

Evaporate the water and alcohol from a carefully measured 25 milliliter sample of spirits, dry the residue at 100 degrees centigrade for 30 minutes and then weigh the residue precisely. Multiply the weight of the residue by 4 to determine the weight of solids in 100 milliliters. The resulting weight per 100 milliliters multiplied by 4 will give the obscuration. Experience has shown that 0.1 gram (100 milligrams) of solids per 100 milliliters of spirits in the range of 80-100 degrees proof will obscure the true proof by 0.4 of one degree of proof. For example, if the weight of solids remaining after evaporation of 25 milliliters 0.125 gram, the amount of solids present in 100 milliliters of the spirits is 0.50 gram (4 times 0.125). The obscuration is 4 times 0.50, which is two degrees of proof. This value added to the temperature corrected hydrometer reading will give the true proof.

(c) *Distillation method.*

Determine the apparent proof and temperature of the sample of spirits and then distill

a carefully measured sample in a small laboratory still, and collect a quantity of the distillate, 1 or 2 milliliters less than the original sample. The distillate is adjusted to the original temperature and restored to the original volume by addition of distilled water. The proof of the restored distillate is then determined by use of a precision hydrometer and thermometer in accordance with the provisions of §13.23 to the nearest 0.1 degree of proof. The difference between the proof so determined and the apparent proof of the undistilled sample is the obscuration; or

(d) *Pycnometer method.*

Determine the specific gravity of the undistilled sample, distill and restore the samples as provided in paragraph (c) of this section and determine the specific gravity of the restored distillate by means of a pycnometer. The specific gravities so obtained will be converted to degrees of proof by interpolation of Table 6 to the nearest 0.1 degree of proof. The difference in proof so obtained is the obscuration.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996]

Determination of Quantity

§30.36 General requirements.

The quantity determination of distilled spirits that are withdrawn from bond in bulk upon tax determination or payment shall be by weight. The quantity of other distilled spirits or denatured spirits may be determined by weight or by volume. When the quantity of distilled spirits or denatured distilled spirits is determined by volume, such determination may be by meter as provided in 27 CFR Part 19, or when approved by the appropriate ATF officer, another method or device.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985 as amended by T.D. ATF-438, 66 FR 5481, Jan. 19, 2001]

Determination of Quantity by Weight

§30.41 Bulk spirits.

When spirits (including denatured spirits) are to be gauged by weight in bulk quantities, the weight shall be determined by means of weighing tanks, mounted on accurate scales. Before each use, the scales shall be balanced at zero load; thereupon the spirits shall be run into the weighing tank and proofed as prescribed in §30.31. However, if the spirits are to be reduced in proof, the spirits shall be so reduced before final determination of the proof. The scales shall then be brought to a balanced condition and the weight of the spirits determined by reading the beam to the nearest graduation mark. From the weight and the proof thus ascertained, the quantity of the spirits in proof gallons shall be determined by reference to Table 4. However, in the case of spirits which contain solids in excess of 600 milligrams per 100 milliliters, the quantity in proof gallons shall be determined by first ascertaining the wine gallons per pound of the spirits and multiplying the wine gallons per pound by the weight, in pounds, of the spirits being gauged and by the true proof (determined as prescribed in §30.31) and dividing the result by 100. The wine gallons per pound of spirits containing solids in excess of 600 milligrams per 100 milliliters shall be ascertained by:

(a) Use of a precision hydrometer and thermometer, in accordance with the provisions of §30.23, to determine the apparent proof of the spirits (if specific gravity at the temperature of the spirits is not more than 1.0) and reference to Table 4 for the wine gallons per pound, or

(b) Use of a specific gravity hydrometer, in accordance with the provisions of §30.25, to determine the specific gravity of the spirits (if the specific gravity at the temperature of the spirits is more than 1.0) and dividing that specific gravity (corrected to 60 degrees Fahrenheit) into the factor 0.120074 (the wine gallons per pound for water at 60 degrees Fahrenheit). When withdrawing a portion of the contents of a weighing tank, the difference between the quantity (ascertained by proofing and weighing) in the tank immediately before the removal of the spirits and the quantity (ascertained by proofing and weighing) in the tank immediately after the removal of the spirits shall be the quantity considered to be withdrawn.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

§30.42 Denatured spirits.

The quantity, in gallons, of any lot or package of specially denatured spirits may be determined by weighing it and then dividing its weight by the weight per gallon of the formula concerned, as given in the appropriate tables in subpart H of 27 CFR Part 21. In the case of completely denatured spirits, the gallonage of any lot or package may be ascertained by determining its weight and apparent proof (hydrometer indication, corrected to 60 degrees Fahrenheit) and then multiplying the weight of the wine gallons per pound factor shown in Table 4 for the (apparent) proof.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

§30.43 Packaged spirits.

When the quantity of spirits (including denatured spirits when gauged by weight) in packages, such as barrels, drums, and similar portable containers, is to be determined by gauge of the individual packages, such quantity shall, except as provided in paragraph (b) of this section, be determined by weighing each package on an accurate weighing beam or platform scale having a beam or dial showing weight in pounds and half pounds, where packages having a capacity in excess of 10 wine gallons are to be gauged, or in pounds and ounces, or pounds and hundredths of a pound, where packages designed to hold 10 wine gallons or less are to be gauged. In either case the tare must be determined and subtracted from the gross weight to obtain the net weight. From the proof and weight ascertained, the quantity of the spirits in proof gallons shall be determined by reference to Table 2, 3, or 4. However, if the spirits contain solids in excess of 600 milligrams per 100 milliliters, the proof gallons shall be determined as prescribed for such spirits in §30.41. Notwithstanding the provisions of this section or of §30.44, (a) gross weights and tares of packages being filled need not be taken in any case where the gauge of the spirits is not derived from such weights under the gauging procedure being utilized, and (b) meters, other devices, or other methods may be used for determining the quantity of spirits in individual packages, when such meter is used as provided in 27 CFR Part 19, or, when such other device or method has been approved by the appropriate ATF officer.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended, 1362, as amended (26 U.S.C. 5204, 5211))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996; T.D.

ATF-438, 66 FR 5481, Jan. 19, 2001]

§30.44 Weighing containers.

(a) *Weighing containers of more than 10 wine gallons.*

The weight of containers having a capacity in excess of 10 wine gallons shall be determined and recorded in pounds and half pounds.

(b) *Weighing containers of 10 wine gallons or less.*

The weight for containers of a capacity of 10 wine gallons or less shall be determined in pounds and ounces, or pounds and hundredths of a pound, and shall be recorded in pounds and hundredths of a pound. The equivalent pounds and hundredths of pounds and the corresponding wine gallons and proof gallons shall be expressed as shown in the following table for the respective weights in pounds and ounces and proofs shown therein or, as applicable, computed in accordance with rules in this section.

WEIGHT OF CONTENTS

Size of container, wine gallons	Pounds	Ozs.	Weight in pounds and hun- dredths of pounds	Contents in wine gallons	Proof gallons
190 proof spirits:					
1	6	13	6.81	1	1.9
2	13	10	13.63	2	3.8
5	34	00	34.00	5	9.5
10	68	00	68.00	10	19.0
192 proof spirirts:					
1	6	13	6.81	1	1.9
2	13	9	13.56	2	3.8
5	33	13	33.81	5	9.6
10	67	10	67.63	10	19.2
200 proof spirits:					
1	6	10	6.63	1	2.0
2	13	4	13.25	2	4.0
5	33	1	33.06	5	10.0
10	66	2	66.12	10	20.0

(c) *Containers of other proofs or sizes.*

Where containers of proofs or sizes not shown above are to be filled, the following rule may be used for ascertaining the weight of the spirits to be placed in the container: Divide the number of gallons representing the quantity of spirits to be placed in the container by the fractional part of a gallon equivalent to 1 pound, to obtain the weight of the spirits in pounds and fractions of a pound to two decimal places. Reduce the decimal fraction of a pound to ounces by multiplying by 16,

calling any fraction of an ounce a whole ounce. The pounds and ounces thus obtained will determine the point to which the spirits must be weighed to produce the results desired. If the weight must be marked on the container in pounds and decimal fractions of a pound, it will be necessary to convert the ounces to hundredths of a pound. The fraction of a gallon equivalent to 1 pound at any given proof shall be ascertained by reference to Table 4. However, if the spirits contain solids in excess of 600 milligrams per 100 milliliters, the fraction of a gallon equivalent to 1 pound shall be determined as prescribed for such spirits in §30.41.

Example. It is desired to fill a 1-gallon can with precisely 1 wine gallon of 194 proof spirits:

1.00 divided by 0.14866=6.73 pounds.

0.73 multiplied by 16=11.68 ounces, rounded to 12 ounces.

Weight of spirits--6 pounds, 12 ounces.

Weight, if required, to be marked on can-6.75 pounds.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended, 1362, as amended (26 U.S.C. 5204, 5211))

§30.45 Withdrawal gauge for packages.

When wooden packages are to be individually gauged for withdrawal, actual tare of the packages shall be determined. The actual tare of a package shall be determined by weighing it after its contents (including rinse water, if any) have been temporarily removed to a separate container or vessel. Where the contents of packages have been temporarily removed for determination of tare, the proof, if any rinse water is added to the spirits, shall be determined after a thorough mixing of the rinse water and the spirits and before return of the spirits to the rinsed packages, and the gross weight shall be determined after the spirits and any added rinse water have been returned to the packages. In the case of metal packages the tare established at the time of filling may be used unless it appears to be incorrect. From the proofs and the net weights of the packages, the wine gallons (if desired) and the proof gallons of spirits shall be determined by the use of Table 2. However, if the spirits contain solids in excess of 600 milligrams per 100 milliliters, the wine gallon and proof gallon contents shall be determined as prescribed for such spirits in §30.41. If either the weight or the proof is beyond the limitations of table 2, either table 3 or table 4 may be used.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

Determination of Quantity by Volume

§30.51 Procedures for measurement of bulk spirits.

Where the quantity of spirits (including denatured spirits) in bulk is to be determined by volume as authorized by this chapter, the measurement shall be made in tanks, by meters as provided in 27 CFR part 19, or by other devices or methods authorized by the appropriate ATF officer, or as otherwise provided in this chapter, or such measurement may be made in tank cars or tank trucks if calibration charts for such conveyances are provided and such charts have been accurately prepared, and certified as accurate, by engineers or other persons qualified to calibrate such conveyances. Volumetric measurements in tanks shall be made only in accurately calibrated tanks equipped with suitable measuring devices, whereby the actual contents can be correctly ascertained. If the temperature of spirits (including denatured spirits) is other than the standard of 60

degrees Fahrenheit, gallonage determined by volumetric measurements shall be corrected to the standard temperature by means of table 7. In the case of denatured spirits, the temperature-correction factor for the proof of the spirits used in denaturation will give sufficiently accurate results, except that the temperature-correction factor used for specially denatured spirits, Formula No. 18, should be that given in table 7 for 100 proof spirits. When the quantity of spirits, in wine gallons, has been determined by volumetric measurement, the number of proof gallons shall be obtained by multiplying the wine gallons by the proof of the spirits as determined under §30.31.

Example

Gauge glass reading inches--88.

Wine gallons per inch--48.96.

Temperature °F--72.

Proof of spirits--86.8.

Temperature correction factor (Table 7)--0.995.

48.96 W.G.x88=4308.48 wine gallons.

4308.48 W.G.x0.995=4286.94 wine gallons.

4286.94 W.G.x0.868=3721.06392=3721.1 proof gallons.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

[T.D. ATF-198, 50 FR 8535, Mar. 1, 1985, as amended by T.D. ATF-381, 61 FR 37004, July 16, 1996; T.D. ATF-438, 66 FR 5481, Jan. 19, 2001]

§30.52 Procedure for measurement of cased spirits.

Where the quantity of spirits in a case is to be determined by volume, such determination shall be made by ascertaining the contents of one bottle in the case and multiplying that figure by the number of bottles in the case. For cases containing bottles filled according to the metric system of measure, the quantity determined shall be converted to wine gallons, as provided in §19.722 of this chapter. The wine gallons of spirits thus determined for one case may then be multiplied by the number of cases containing spirits at the same proof when determining the quantity of spirits for more than one case. The proof gallons of spirits in cases shall be determined by multiplying the wine gallons by the proof (divided by 100).

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

Subpart E--Prescribed Tables

NOTE--The tables referred to in this subpart appear in their entirety in the "Gauging Manual Embracing Instructions and Tables for Determining Quantity of Distilled Spirits by Proof and Weight" which is incorporated by reference in this part (see §30.1).

§30.61 Table 1, showing the true percent of proof spirit for any indication of the hydrometer at temperatures between zero and 100 degrees Fahrenheit.

This table shows the true percent of proof of distilled spirits for indications of the hydrometer likely to occur in practice at temperatures between zero and 100 degrees

Fahrenheit and shall be used in determining the proof of spirits. The left-hand column contains the reading of the hydrometer and on the same horizontal line, in the body of the table, in the "Temperature" column corresponding to the reading of the thermometer is the corrected reading or "true percent of proof." The table is computed for tenths of a percent.

Example.

Temperature, °F	75
Hydrometer reading	193
True percent of proof	189.5

Where fractional readings are ascertained, the proper interpolations will be made (see §30.23). If the distilled spirits contain dissolved solids, temperature-correction of the hydrometer reading by the use of this table would result in apparent proof rather than true proof.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

§30.62 Table 2, showing wine gallons and proof gallons by weight.

The wine and proof gallon content by weight and proof of packages of distilled spirits usually found in actual practice will be ascertained from this table. The left-hand column contains the weights. The true percent of proof is shown on the heading of each page in a range from 90 degrees to 200 degrees. Under the true percent of proof and on the same horizontal line with the weight will be found the wine gallons (at 60 degrees Fahrenheit) and the proof gallons respectively. Where either the weight or the proof of a quantity of spirits is beyond the limitations of this table, the number of proof gallons may be ascertained by reference to Table 3. This table may also be used to ascertain the wine gallons (at 60 degrees Fahrenheit) and proof gallons of spirituous liquor containing dissolved solids where the weight, apparent proof (hydrometer indication corrected to 60 degrees Fahrenheit), and obscuration factor have been determined.

Example.

334 lbs. of distilled spirits.

Apparent proof--96.0°.

Obscuration--0.8°.

True Proof 96.0°+0.8°=96.8°.

334 lbs. at 96.0° apparent proof=42.8 wine gallons.

42.8 wine gallons x 96.8°=41.4 proof gallons.

In addition this table may be used to obtain the wine gallons, at the prevailing temperature, of most liquids within the range of the table, from the weight of the liquid and the uncorrected reading of the hydrometer stem. An application of this would be in determining the capacity of a package.

Example. It is desired to determine, or to check the rated capacity of a package having a net weight of 395 pounds when completely filled with spirits having an uncorrected hydrometer reading of 113.0°. The full capacity of the package, 51.5 wine gallons, would be found by

referring to the table at 395 pounds and 113° proof (hydrometer reading).

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended, 1362, as amended (26 U.S.C. 5204, 5211))

§30.63 Table 3, for determining the number of proof gallons from the weight and proof of spiritous liquor.

When the weight or proof of a quantity of distilled spirits is not found in Table 2, the proof gallons may be ascertained from Table 3. The wine gallons (at 60 degrees Fahrenheit) may be ascertained by dividing the proof gallons by the proof.

Example. A tank car of spirits of 190 degrees of proof weighed 60,378 pounds net. We find--

	Proof gallons
60,000 pounds equal to	16,778.4
300 pounds equal to	83.9
70 pounds equal to	19.9
8 pounds equal to	2.2
Total	16,884.1

That is, the total weight of 60,378 pounds of spirits at 190 proof is equal to 16,884.1 proof gallons. The equivalent gallonage for 70 pounds is found from the column 700 pounds by moving the decimal point one place to the left; that for 8 pounds from the column 800 pounds by moving the decimal point two places to the left.

Example. A package of spirits at 86 proof weighed 321½ pounds net. We find--

	Proof gallons
300 pounds equal to	32.7
20 pounds equal to	2.2
1 pound equal to	.1
1/2 pound equal to	.1
Total	35.1

That is, 321½ pounds of spirits at 86 proof is equal to 35.1 proof gallons. The equivalent gallonage for 20 pounds is found from the column 200 pounds by moving the decimal point one place to the left; that for 1 pound from the column 100 pounds by moving the decimal point two places to the left; that for the ½ pound from the column 500 pounds by moving the decimal point three places to the left.

Fractional gallons beyond the first decimal ascertained through use of this table will be dropped if less than 0.05 or will be added as 0.1 if 0.05 or more. The wine gallons (at 60 degrees Fahrenheit) may be determined by dividing the proof gallons by the proof. For example: 35.1 divided by 0.86 equals 40.8 wine gallons.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C.5204))

§30.64 Table 4, showing the fractional part of a gallon per pound at each percent and each tenth percent of proof of spirituous liquor.

This table provides a method for use in ascertaining the wine gallon (at 60 degrees Fahrenheit) and/or proof gallon contents of containers of spirits by multiplying the net weight of the spirits by the fractional part of a gallon per pound shown in the table for spirits of the same proof. Fractional gallons beyond the first decimal will be dropped if less than 0.05 or will be added as 0.1 if 0.05 or more.

Example. It is desired to ascertain the wine gallons and proof gallons of a tank of 190 proof spirits weighing 81,000 pounds.

81,000x0.14718=11,921.58=11,921.6 wine gallons.

81,000x0.27964=22,650.84=22,650.8 proof gallons.

This table may also be used for ascertaining the quantity of water required to reduce to a given proof. To do this, divide the proof gallons of spirits to be reduced by the fractional part of a proof gallon per pound of spirits at the proof to which the spirits are to be reduced, and subtract from the quotient the net weight of the spirits before reduction. The remainder will be the pounds of water needed to reduce the spirits to the desired proof.

Example. It is desired to ascertain the quantity of water needed to reduce 1,000 pounds of 200 proof spirits, 302.58 proof gallons, to 190 proof:

302.58 divided by 0.27964 equals 1,082.03 pounds, weight of spirits after reduction.

1.082.03 minus 1,000 equals 82.03 pounds, weight of water required to reduce to desired proof.

The slight variation between this table and Tables 2, 3, and 5 on some calculations is due to the dropping or adding of fractions beyond the first decimal in those tables. This table may also be used to determine the wine gallons (at 60 degrees Fahrenheit) of distilled spirits containing dissolved solids from the total weight of the liquid and its apparent proof (hydrometer indication, corrected to 60 degrees Fahrenheit). The proof gallons may then be found by multiplying the wine gallons by the true proof.

Example.

5,350 pounds of blended whisky containing added solids

Temperature, °F	75.0°
Hydrometer reading	92.0°
Apparent proof	85.5°
Obscuration	0.5°
True proof	86.0°

5,350.0 lbs.x0.12676 (W.G. per pound factor for apparent proof of 85.5°)=678.2 wine gallons

678.2 W.G.x0.86=583.3 proof gallons

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended 1362, as amended (26 U.S.C. 5204, 5211))

§30.65 Table 5, showing the weight per wine gallon (at 60 degrees Fahrenheit) and proof gallon at each percent of proof of spirituous liquor.

This table may be used to ascertain the weight of any given number of wine gallons (at 60 degrees Fahrenheit) or proof gallons of spirits by multiplying the pounds per gallon by the given number of gallons of the spirits. The table should be especially useful where it is desired to weigh a precise quantity of spirits.

Example. It is desired to ascertain the weight of 100 wine gallons of 190 proof spirits:

6.79434x100 equals 679.43 pounds, net weight of 100 wine gallons of 190 proofs spirits.

Example. It is desired to ascertain the weight of 100 proof gallons of 190 proof spirits.

3.57597x100 equals 357.60 pounds, net weight of 100 proof gallons of 190 proof spirits.

The slight variation between this table and Tables 2 and 3 on some calculations is due to dropping or adding of fractions beyond the first decimal on those tables. This table also shows the weight per wine gallon (at the prevailing temperature) corresponding to each uncorrected reading of a proof hydrometer.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

§30.66 Table 6, showing respective volumes of alcohol and water and the specific gravity in both air and vacuum of spirituous liquor.

This table provides an alternate method for use in ascertaining the quantity of water needed to reduce the strength of distilled spirits by a definite amount. To do this, divide the alcohol in the given strength by the alcohol in the required strength, multiply the quotient by the water in the required strength, and subtract the water in the given strength from the product. The remainder is the number of gallons of water to be added to 100 gallons of spirits of the given strength to produce a spirit of a required strength.

Example. It is desired to reduce spirits of 191 proof to 188 proof. We find that 191 proof spirits contains 95.5 parts alcohol and 5.59 parts water, and 188 proof spirits contains 94.0 parts alcohol and 7.36 parts water.

95.5 (the strength of 100 wine gallons of spirits at 191 proof) divided by 94.0 (the strength of 100 wine gallons of spirits at 188 proof) equals 1.01.

7.36 (the water in 188 proof) multiplied by 1.01 equals 7.43.

7.43 less 5.59 (the water in 191 proof spirits) equal 1.84 gallons of water to be added to each 100 wine gallons of 191 proof spirits to be reduced.

This rule is applicable for reducing to any proof; but when it is desired to reduce to 100 proof, it is sufficient to point off two decimals in the given proof, multiply by 53.73, and deduct the water in the given strength. Thus, to reduce 112 proof spirits to 100 proof:

1.12x53.73-47.75 equals 12.42 gallons of water to be added to each 100 wine gallons of spirits to be reduced.

This table may also be used to obtain the proof gallonage of spirituous liquor according to weight and percent of proof.

Example. It is desired to determine the number of gallons in 400 pounds of spirits of 141 percent of proof. Multiply the weight of one gallon of water in air by the specific gravity in air of the spirits--8.32823 by 0.88862--the product (7.40063) divided into 400 gives 54.049 wine gallons, which rounded to the nearest hundredth is 54.05 and multiplied by 1.41 gives 76.2 proof gallons. In rounding off where the decimal is less than five, it will be dropped; if it is five or over a unit will be added.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

§30.67 Table 7, for correction of volume of spirituous liquors to 60 degrees Fahrenheit.

This table is prescribed for use in correcting spirits to volume at 60 degrees Fahrenheit.

To do this, multiply the wine gallons of spirits which it is desired to correct to volume at 60 degrees Fahrenheit by the factor shown in the table at the percent of proof and temperature of the spirits. The product will be the corrected gallonage at 60 degrees Fahrenheit. This table is also prescribed for use in ascertaining the true capacity of containers where the wine gallon contents at 60 degrees Fahrenheit have been determined by weight in accordance with Tables 2, 3, 4, or 5. This is accomplished by dividing the wine gallons at 60 degrees Fahrenheit by the factor shown in the table at the percent of proof and temperature of the spirits. The quotient will be the true capacity of the container.

> *Example.* It is desired to ascertain the volume at 60 degrees Fahrenheit of 1,000 wine gallons of 190 proof spirits at 76 degrees Fahrenheit:
>
> 1,000x0.991 equals 991 wine gallons, the corrected gallonage at 60 degrees Fahrenheit.

Example. It is desired to ascertain the capacity of a container of 190 proof spirits at 76 degrees Fahrenheit, shown by Table 2 to contain 55.1 wine gallons at 60 degrees Fahrenheit:

55.1 divided by 0.991 equals 55.6 wine gallons, the true capacity of the container when filled with spirits of 60 degrees temperature.

It will be noted the table is prepared in multiples of 5 percent of proof and 2 degrees temperature. Where the spirits to be corrected are of an odd temperature, one-half of the difference, if any, between the factors for the next higher and lower temperature, should be added to the factor for the next higher temperature.

> *Example.* It is desired to correct spirits of 180 proof at 51 degrees temperature:
>
> 1.006 (50°)-1.005 (52°)=0.001 divided by 2=0.0005
>
> 0.0005+1.005=1.0055 correction factor at 51 °F.
>
> *Example.* It is desired to correct spirits of 180 proof at 53 degrees temperature:
>
> 1.005 (52°)-1.003 (54°)=0.002 divided by 2=0.001
>
> 0.001+1.003=1.004 correction factor at 53 °F.

Where the percent of proof is other than a multiple of five, the difference, if any, between the factors for the next higher and lower proofs should be divided by five and multiplied by the degrees of proof beyond the next lower proof, and the fractional product so obtained should be added to the factor for the next lower proof (if the temperature is above 60 degrees Fahrenheit, the fractional product so obtained must be subtracted from the factor for next lower proof), or if it is also necessary to correct the factor because of odd temperature, to the temperature corrected factor for the next lower proof.

> *Example.* It is desired to ascertain the correction factor for spirits of 112 proof at 47 degrees temperature:
>
> 1.006 (46°)-1.005 (48°)=0.001 divided by 2=0.0005
>
> 0.0005+1.005=1.0055 corrected factor at 47 °F.
>
> 1.007 (115 proof)-1.006 (110 proof)=0.001
>
> 0.001 divided by 5=0.0002 (for each percent of proof)x2 (for 112 proof)=0.0001

0.0004=1.0055 (corrected factor at 47 °F.)=1.0059 correction factor to be used for 112 proof at 47 °F

Example. It is desired to ascertain the correction factor for spirits of 97 proof at 93 degrees temperature:

0.986 (92°)-0.985 (94°)=0.001 divided by 2=0.0005

0.0005+0.985=0.9855 corrected factor at 93 °F.

0.986 (95 proof)-0.985 (100 proof)=0.001

0.001 divided by 5=0.0002 (for each percent of proof)x2 (for 97 proof)=0.0004

0.9855 (corrected factor at 93 °F.)=0.0005=0.9851 correction factor to be used for 97 proof at 93 °F.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended (26 U.S.C. 5204))

Subpart F--Optional Gauging Procedures

§30.71 Optional method for determination of proof for spirits containing solids of 400 milligrams or less per 100 milliliters.

The proof of spirits shall be determined to the nearest tenth degree which shall be the proof used in determining the proof gallons and all fractional parts thereof to the nearest tenth proof gallon. The proof of spirits containing solids of 400 milligrams or less per 100 milliliters shall be determined by the use of a hydrometer and a thermometer in accordance with the provisions of §30.23. However, notwithstanding the provisions of §30.31, the proprietor may, at his option, add to the proof so determined the obscuration determined as prescribed in §30.32.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended, 1362, as amended (26 U.S.C. 5211))

§30.72 Recording obscuration by proprietors using the optional method for determination of proof.

Any proprietor using the optional method for determination of proof for spirits containing solids of 400 milligrams or less per 100 milligrams as provided in §30.71 shall record the obscuration so determined on the record of gauge required by 27 CFR part 19.

(Sec. 201, Pub. L. 85-859, 72 Stat. 1358, as amended, 1362, as amended (26 U.S.C. 5211))